

# SEQUENCE LISTING

<110> THORPE, PHILIP E.  
RAN, SOPHIA

<120> CANCER TREATMENT KITS USING ANTIBODIES TO AMINOPHOSPHOLIPIDS

<130> 4001.002282

<140> UNKNOWN

<141> 1999-07-12

<160> 5

<170> PatentIn Ver. 2.0

<210> 1

<211> 2149

<212> DNA

<213> Homo sapiens

<400> 1

cagctgactc aggcaggctc catgctgaac ggtcacacag agaggaaaca ataaatctca 60  
gctactatgc aataaatatc tcaagtttta acgaagaaaa acatcattgc agtgaaataa 120  
aaaattttta aatttttagaa caaagctaac aaatggctag ttttctatga ttcttcttca 180  
aacgctttct ttgaagcaga aagagtcaca caaacaagca gttttacctg aataaaagaa 240  
ctagtttttag aggtcagaag aaaggagcaa gttttgcgag aggcacggaa ggagtgtgct 300  
ggcagtacaa tgacagtttt cctttccttt gctttcctcg ctgccattct gactcacata 360  
gggtgcagca atcagcgccg aagtccagaa aacagtggga gaagatataa ccggattcaa 420  
catgggcaat gtgcctacac ttctattctt ccagaacacg atggcaactg tcgtgagagt 480  
acgacagacc agtacaacac aaacgctctg cagagagatg ctccacacgt ggaaccggat 540  
ttctcttccc agaaacttca acatctggaa catgtgatgg aaaattatac tcagtggctg 600  
caaaaacttg agaattacat tgtggaaaac atgaagtcgg agatggccca gatacagcag 660  
aatgcagttc agaaccacac ggctaccatg ctggagatag gaaccagcct cctctctcag 720  
actgcagagc agaccagaaa gctgacagat gttgagaccc aggtactaaa tcaaaacttct 780  
cgacttgaga tacagctgct ggagaattca ttatccacct acaagctaga gaagcaactt 840  
cttcaacaga caaatgaaat cttgaagatc catgaaaaaa acagtttatt agaacataaa 900  
atcttagaaa tgggaaggaaa acacaaggaa gagttggaca ccttaaagga agagaaagag 960  
aaccttcaag gcttggttac tcgtcaaaca tatataatcc aggagctgga aaagcaatta 1020  
aacagagcta ccaccaacaa cagtgtcctt cagaagcagc aactggagct gatggacaca 1080  
gtccacaacc ttgtcaatct ttgactaaa gaagtggttt tactaaaggg aggaaaaaga 1140  
gaggaagaga aaccatttag agactgtgca gatgtatatac aagctggttt taataaaagt 1200  
ggaatctaca ctatttatat taataatatg ccagaaccca aaaaggtgtt ttgcaatatg 1260  
gatgtcaatg ggggaggttg gactgtaata caacatcgtg aagatggaag tctagatttc 1320  
caagaggctt ggaaggaata taaaatgggt tttggaatc cctccggtga atattggctg 1380  
gggaatgagt ttatttttgc cattaccagt cagaggcagt acatgctaag aattgagtta 1440  
atggactggg aagggaaccg agcctattca cagtatgaca gattccacat aggaaatgaa 1500  
aagcaaaact ataggttgta tttaaaaggt cacactggga cagcaggaaa acagagcagc 1560  
ctgatcttac acggtgctga tttcagcact aaagatgctg ataagacaa ctgtatgtgc 1620  
aaatgtgccc tcatgttaac aggaggatgg tggtttgatg cttgtggccc ctccaatcta 1680  
aatggaatgt tctatactgc gggacaaaac catggaaaac tgaatgggat aaagtggcac 1740  
tacttcaaag ggcccagtta ctcttacctg tccacaacta tgatgattcg accttttagat 1800  
ttttgaaagc gcaatgtcag aagcgattat gaaagcaaca aagaaatccg gagaagctgc 1860  
caggtgagaa actgtttgaa aacttcagaa gcaacaata ttgtctccct tccagcaata 1920  
agtggtagtt atgtgaagtc accaagggtc ttgaccgtga atctggagcc gtttgagttc 1980  
acaagagtct ctacttgggg tgacagtgtc cacgtggctc gactatagaa aactccactg 2040  
actgtcgggc tttaaaaagg gaagaaactg ctgagcttgc tgtgcttcaa actactactg 2100

actgtcgggc tttaaaaagg gaagaaactg ctgagcttgc tgtgcttcaa actactactg 2100  
gaccttattt tggaactatg gtagccagat gataaatatg gttaatttc 2149

<210> 2

<211> 498

<212> PRT

<213> Homo sapiens

<400> 2

Met Thr Val Phe Leu Ser Phe Ala Phe Leu Ala Ala Ile Leu Thr His  
1 5 10 15

Ile Gly Cys Ser Asn Gln Arg Arg Ser Pro Glu Asn Ser Gly Arg Arg  
20 25 30

Tyr Asn Arg Ile Gln His Gly Gln Cys Ala Tyr Thr Phe Ile Leu Pro  
35 40 45

Glu His Asp Gly Asn Cys Arg Glu Ser Thr Thr Asp Gln Tyr Asn Thr  
50 55 60

Asn Ala Leu Gln Arg Asp Ala Pro His Val Glu Pro Asp Phe Ser Ser  
65 70 75 80

Gln Lys Leu Gln His Leu Glu His Val Met Glu Asn Tyr Thr Gln Trp  
85 90 95

Leu Gln Lys Leu Glu Asn Tyr Ile Val Glu Asn Met Lys Ser Glu Met  
100 105 110

Ala Gln Ile Gln Gln Asn Ala Val Gln Asn His Thr Ala Thr Met Leu  
115 120 125

Glu Ile Gly Thr Ser Leu Leu Ser Gln Thr Ala Glu Gln Thr Arg Lys  
130 135 140

Leu Thr Asp Val Glu Thr Gln Val Leu Asn Gln Thr Ser Arg Leu Glu  
145 150 155 160

Ile Gln Leu Leu Glu Asn Ser Leu Ser Thr Tyr Lys Leu Glu Lys Gln  
165 170 175

Leu Leu Gln Gln Thr Asn Glu Ile Leu Lys Ile His Glu Lys Asn Ser  
180 185 190

Leu Leu Glu His Lys Ile Leu Glu Met Glu Gly Lys His Lys Glu Glu  
195 200 205

Leu Asp Thr Leu Lys Glu Glu Lys Glu Asn Leu Gln Gly Leu Val Thr  
210 215 220

Arg Gln Thr Tyr Ile Ile Gln Glu Leu Glu Lys Gln Leu Asn Arg Ala  
225 230 235 240

Thr Thr Asn Asn Ser Val Leu Gln Lys Gln Gln Leu Glu Leu Met Asp  
245 250 255

552120-031560

093486-098560

Thr Val His Asn Leu Val Asn Leu Cys Thr Lys Glu Gly Val Leu Leu  
 260 265 270

Lys Gly Gly Lys Arg Glu Glu Glu Lys Pro Phe Arg Asp Cys Ala Asp  
 275 280 285

Val Tyr Gln Ala Gly Phe Asn Lys Ser Gly Ile Tyr Thr Ile Tyr Ile  
 290 295 300

Asn Asn Met Pro Glu Pro Lys Lys Val Phe Cys Asn Met Asp Val Asn  
 305 310 315 320

Gly Gly Gly Trp Thr Val Ile Gln His Arg Glu Asp Gly Ser Leu Asp  
 325 330 335

Phe Gln Arg Gly Trp Lys Glu Tyr Lys Met Gly Phe Gly Asn Pro Ser  
 340 345 350

Gly Glu Tyr Trp Leu Gly Asn Glu Phe Ile Phe Ala Ile Thr Ser Gln  
 355 360 365

Arg Gln Tyr Met Leu Arg Ile Glu Leu Met Asp Trp Glu Gly Asn Arg  
 370 375 380

Ala Tyr Ser Gln Tyr Asp Arg Phe His Ile Gly Asn Glu Lys Gln Asn  
 385 390 395 400

Tyr Arg Leu Tyr Leu Lys Gly His Thr Gly Thr Ala Gly Lys Gln Ser  
 405 410 415

Ser Leu Ile Leu His Gly Ala Asp Phe Ser Thr Lys Asp Ala Asp Asn  
 420 425 430

Asp Asn Cys Met Cys Lys Cys Ala Leu Met Leu Thr Gly Gly Trp Trp  
 435 440 445

Phe Asp Ala Cys Gly Pro Ser Asn Leu Asn Gly Met Phe Tyr Thr Ala  
 450 455 460

Gly Gln Asn His Gly Lys Leu Asn Gly Ile Lys Trp His Tyr Phe Lys  
 465 470 475 480

Gly Pro Ser Tyr Ser Leu Arg Ser Thr Thr Met Met Ile Arg Pro Leu  
 485 490 495

Asp Phe

<210> 3

<211> 2269

<212> DNA

<213> Homo sapiens

<400> 3

tggttggtg tttatctcct cccagccttg agggagggaa caacactgta ggatctgggg 60  
 agagaggaac aaaggaccgt gaaagctgct ctgtaaaagc tgacacagcc ctcccaagt 120

```

agcaggactg ttcttcccac tgcaatctga cagtttactg catgcctgga gagaacacag 180
cagtaaaaac caggtttgct actggaaaaa gaggaaagag aagactttca ttgacggacc 240
cagccatggc agcgtagcag ccttgcgttt cagacggcag cagctcggga ctctggacgt 300
gtgtttgccc tcaagtttgc taagctgctg gtttattact gaagaaagaa tgtggcagat 360
tgttttcttt actctgagct gtgatcttgt cttggccgca gcctataaca actttcggaa 420
gagcatggac agcataggaa agaagcaata tcaggtccag catgggtcct gcagctacac 480
tttctctctg ccagagatgg acaactgccg ctcttctcc agccctacg tgtccaatgc 540
tgtgcagagg gacgcgccgc tcgaatacga tgactcggtg cagaggctgc aagtgtctga 600
gaacatcatg gaaaacaaca ctcagtggct aatgaagctt gagaattata tccaggacaa 660
catgaagaaa gaaatggtag agatacagca gaatgcagta cagaaccaga cggctgtgat 720
gatagaaata gggacaaacc tgttgaacca aacagctgag caaacgcgga agttaactga 780
tgtggaagcc caagtattaa atcagaccac gagacttgaa cttcagctct tggaaactc 840
cctctcgaca aacaaattgg aaaaacagat tttggaccag accagtgaat taaacaaatt 900
gcaagataag aacagtttcc tagaaaagaa ggtgctagct atggaagaca agcacatcat 960
ccaactacag tcaataaaaag aagagaaaga tcagctacag gtgttagtat ccaagcaaaa 1020
ttccatcatt gaagaactag aaaaaaaaaat agtgactgcc acggtgaata attcagttct 1080
tcaaaagcag caacatgatc tcattggagac agttaataac ttactgacta tgatgtccac 1140
atcaaaactca gctaaggacc ccactgttgc taaagaagaa caaatcagct tcagagactg 1200
tgctgaagta ttcaaatcag gacacaccac aaatggcatc tacacgttaa cattccctaa 1260
ttctacagaa gagatcaagg cctactgtga catggaagct ggaggaggcg ggtggacaat 1320
tattcagcga cgtgaggatg gcagcgttga ttttcagagg acttggaag aatataaagt 1380
gggatttggg aacccttcag gagaatattg gctgggaaat gagtttgtt cgcaactgac 1440
taatcagcaa cgctatgtgc ttaaaataca ctttaaagac tgggaaggga atgaggctta 1500
ctcattgtat gaacatttct atctctcaag tgaagaactc aattatagga ttcaccttaa 1560
aggacttaca gggacagccg gcaaaaataag cagcatcagc caaccaggaa atgattttag 1620
cacaaggat ggagacaaag acaaatgtat ttgcaaatgt tcaaaaatgc taaccggagg 1680
ctgggtggtt gatgcatgtg gtccttccaa cttgaacgga atgtactatc cacagaggca 1740
gaacacaaat aagttcaacg gcattaaatg gtactactgg aaaggctcag gctattcgct 1800
caaggccaca accatgatga tccgaccagc agatttctaa acatcccagt ccacctgagg 1860
aactgtctcg aactattttc aaagacttaa gccagtgca ctgaaagtca cggctgcgca 1920
ctgtgtcttc ttccaccaca gagggcgtgt gctcgggtgt gacgggaccc acatgtctca 1980
gattagagcc tgtaaaactt atcacttaaa cttgcacac ttaacggacc aaagcaagac 2040
cctaaacatc cataattgtg attagacaga acacctatgc aaagatgaac ccgaggctga 2100
gaatcagact gacagtttac agacgtgtgt gtcacaacca agaattgtat gtgcaagttt 2160
atcagtaaat aactggaaaa cagaacactt atgttataca atacagatca tcttggaaact 2220
gcattcttct gagcactgtt tatacactgt gtaaatatcc atatgtcct 2269

```

<210> 4  
 <211> 496  
 <212> PRT  
 <213> Homo sapiens

<400> 4  
 Met Trp Gln Ile Val Phe Phe Thr Leu Ser Cys Asp Leu Val Leu Ala  
 1 5 10 15  
 Ala Ala Tyr Asn Asn Phe Arg Lys Ser Met Asp Ser Ile Gly Lys Lys  
 20 25 30  
 Gln Tyr Gln Val Gln His Gly Ser Cys Ser Tyr Thr Phe Leu Leu Pro  
 35 40 45  
 Glu Met Asp Asn Cys Arg Ser Ser Ser Pro Tyr Val Ser Asn Ala  
 50 55 60  
 Val Gln Arg Asp Ala Pro Leu Glu Tyr Asp Asp Ser Val Gln Arg Leu  
 65 70 75 80

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gln | Val | Leu | Glu | Asn | Ile | Met | Glu | Asn | Asn | Thr | Gln | Trp | Leu | Met | Lys | 85  | 90  | 95  |
| Leu | Glu | Asn | Tyr | Ile | Gln | Asp | Asn | Met | Lys | Lys | Glu | Met | Val | Glu | Ile | 100 | 105 | 110 |
| Gln | Gln | Asn | Ala | Val | Gln | Asn | Gln | Thr | Ala | Val | Met | Ile | Glu | Ile | Gly | 115 | 120 | 125 |
| Thr | Asn | Leu | Leu | Asn | Gln | Thr | Ala | Glu | Gln | Thr | Arg | Lys | Leu | Thr | Asp | 130 | 135 | 140 |
| Val | Glu | Ala | Gln | Val | Leu | Asn | Gln | Thr | Thr | Arg | Leu | Glu | Leu | Gln | Leu | 145 | 150 | 155 |
| Leu | Glu | His | Ser | Leu | Ser | Thr | Asn | Lys | Leu | Glu | Lys | Gln | Ile | Leu | Asp | 165 | 170 | 175 |
| Gln | Thr | Ser | Glu | Ile | Asn | Lys | Leu | Gln | Asp | Lys | Asn | Ser | Phe | Leu | Glu | 180 | 185 | 190 |
| Lys | Lys | Val | Leu | Ala | Met | Glu | Asp | Lys | His | Ile | Ile | Gln | Leu | Gln | Ser | 195 | 200 | 205 |
| Ile | Lys | Glu | Glu | Lys | Asp | Gln | Leu | Gln | Val | Leu | Val | Ser | Lys | Gln | Asn | 210 | 215 | 220 |
| Ser | Ile | Ile | Glu | Glu | Leu | Glu | Lys | Lys | Ile | Val | Thr | Ala | Thr | Val | Asn | 225 | 230 | 235 |
| Asn | Ser | Val | Leu | Gln | Lys | Gln | Gln | His | Asp | Leu | Met | Glu | Thr | Val | Asn | 245 | 250 | 255 |
| Asn | Leu | Leu | Thr | Met | Met | Ser | Thr | Ser | Asn | Ser | Ala | Lys | Asp | Pro | Thr | 260 | 265 | 270 |
| Val | Ala | Lys | Glu | Glu | Gln | Ile | Ser | Phe | Arg | Asp | Cys | Ala | Glu | Val | Phe | 275 | 280 | 285 |
| Lys | Ser | Gly | His | Thr | Thr | Asn | Gly | Ile | Tyr | Thr | Leu | Thr | Phe | Pro | Asn | 290 | 295 | 300 |
| Ser | Thr | Glu | Glu | Ile | Lys | Ala | Tyr | Cys | Asp | Met | Glu | Ala | Gly | Gly | Gly | 305 | 310 | 315 |
| Gly | Trp | Thr | Ile | Ile | Gln | Arg | Arg | Glu | Asp | Gly | Ser | Val | Asp | Phe | Gln | 325 | 330 | 335 |
| Arg | Thr | Trp | Lys | Glu | Tyr | Lys | Val | Gly | Phe | Gly | Asn | Pro | Ser | Gly | Glu | 340 | 345 | 350 |
| Tyr | Trp | Leu | Gly | Asn | Glu | Phe | Val | Ser | Gln | Leu | Thr | Asn | Gln | Gln | Arg | 355 | 360 | 365 |
| Tyr | Val | Leu | Lys | Ile | His | Leu | Lys | Asp | Trp | Glu | Gly | Asn | Glu | Ala | Tyr | 370 | 375 | 380 |

Ser Leu Tyr Glu His Phe Tyr Leu Ser Ser Glu Glu Leu Asn Tyr Arg  
 385 390 395 400  
 Ile His Leu Lys Gly Leu Thr Gly Thr Ala Gly Lys Ile Ser Ser Ile  
 405 410 415  
 Ser Gln Pro Gly Asn Asp Phe Ser Thr Lys Asp Gly Asp Asn Asp Lys  
 420 425 430  
 Cys Ile Cys Lys Cys Ser Gln Met Leu Thr Gly Gly Trp Trp Phe Asp  
 435 440 445  
 Ala Cys Gly Pro Ser Asn Leu Asn Gly Met Tyr Tyr Pro Gln Arg Gln  
 450 455 460  
 Asn Thr Asn Lys Phe Asn Gly Ile Lys Trp Tyr Tyr Trp Lys Gly Ser  
 465 470 475 480  
 Gly Tyr Ser Leu Lys Ala Thr Thr Met Met Ile Arg Pro Ala Asp Phe  
 485 490 495

<210> 5  
 <211> 495  
 <212> PRT  
 <213> Homo sapiens

<400> 5  
 Met Trp Gln Ile Val Phe Phe Thr Leu Ser Cys Asp Leu Val Leu Ala  
 1 5 10 15  
 Ala Ala Tyr Asn Asn Phe Arg Lys Ser Met Asp Ser Ile Gly Lys Lys  
 20 25 30  
 Gln Tyr Gln Val Gln His Gly Ser Cys Ser Tyr Thr Phe Leu Leu Pro  
 35 40 45  
 Glu Met Asp Asn Cys Arg Ser Ser Ser Ser Pro Tyr Val Ser Asn Ala  
 50 55 60  
 Val Gln Arg Asp Ala Pro Leu Glu Tyr Asp Phe Ser Ser Gln Lys Leu  
 65 70 75 80  
 Gln His Leu Glu His Val Met Glu Asn Tyr Thr Gln Trp Leu Gln Lys  
 85 90 95  
 Leu Glu Asn Tyr Ile Val Glu Asn Met Lys Ser Glu Met Ala Gln Ile  
 100 105 110  
 Gln Gln Asn Ala Val Gln Asn His Thr Ala Thr Met Leu Glu Ile Gly  
 115 120 125

Thr Ser Leu Leu Ser Gln Thr Ala Glu Gln Thr Arg Lys Leu Thr Asp  
130 135 140

Val Glu Thr Gln Val Leu Asn Gln Thr Ser Arg Leu Glu Ile Gln Leu  
145 150 155 160

Leu Glu Asn Ser Leu Ser Thr Tyr Lys Leu Glu Lys Gln Leu Leu Gln  
165 170 175

Gln Thr Asn Glu Ile Leu Lys Ile His Glu Lys Asn Ser Leu Leu Glu  
180 185 190

His Lys Ile Leu Glu Met Glu Gly Lys His Lys Glu Glu Leu Asp Thr  
195 200 205

Leu Lys Glu Glu Lys Glu Asn Leu Gln Gly Leu Val Thr Arg Gln Thr  
210 215 220

Tyr Ile Ile Gln Glu Leu Glu Lys Gln Leu Asn Arg Ala Thr Thr Asn  
225 230 235 240

Asn Ser Val Leu Gln Lys Gln Gln Leu Glu Leu Met Asp Thr Val His  
245 250 255

Asn Leu Val Asn Leu Ser Thr Lys Glu Gly Val Leu Leu Lys Gly Gly  
260 265 270

Lys Arg Glu Glu Glu Lys Pro Phe Arg Asp Cys Ala Asp Val Tyr Gln  
275 280 285

Ala Gly Phe Asn Lys Ser Gly Ile Tyr Thr Ile Tyr Ile Asn Asn Met  
290 295 300

Pro Glu Pro Lys Lys Val Phe Cys Asn Met Asp Val Asn Gly Gly Gly  
305 310 315 320

Trp Thr Val Ile Gln His Arg Glu Asp Gly Ser Leu Asp Phe Gln Arg  
325 330 335

Gly Trp Lys Glu Tyr Lys Met Gly Phe Gly Asn Pro Ser Gly Glu Tyr  
340 345 350

Trp Leu Gly Asn Glu Phe Ile Phe Ala Ile Thr Ser Gln Arg Gln Tyr  
355 360 365

Met Leu Arg Ile Glu Leu Met Asp Trp Glu Gly Asn Arg Ala Tyr Ser  
370 375 380

Gln Tyr Asp Arg Phe His Ile Gly Asn Glu Lys Gln Asn Tyr Arg Leu  
385 390 395 400

Tyr Leu Lys Gly His Thr Gly Thr Ala Gly Lys Gln Ser Ser Leu Ile  
405 410 415

Leu His Gly Ala Asp Phe Ser Thr Lys Asp Ala Asp Asn Asp Asn Cys  
420 425 430

Met Cys Lys Cys Ala Leu Met Leu Thr Gly Gly Trp Trp Phe Asp Ala  
 435 440 445

Cys Gly Pro Ser Asn Leu Asn Gly Met Phe Tyr Thr Ala Gly Gln Asn  
 450 455 460

His Gly Lys Leu Asn Gly Ile Lys Trp His Tyr Phe Lys Gly Pro Ser  
 465 470 475 480

Tyr Ser Leu Arg Ser Thr Thr Met Met Ile Arg Pro Leu Asp Phe  
 485 490 495

09251862-071299



# SEQUENCE LISTING

<110> THORPE, PHILIP E.  
RAN, SOPHIA

<120> CANCER TREATMENT KITS USING ANTIBODIES TO  
AMINOPHOSPHOLIPIDS

<130> 4001.002282

<140> UNKNOWN

<141> 1999-07-12

<160> 5

<170> PatentIn Ver. 2.0

<210> 1

<211> 2149

<212> DNA

<213> Homo sapiens

<400> 1

```
cagctgactc aggcaggctc catgctgaac ggtcacacag agaggaaaca ataaatctca 60
gctactatgc aataaatatc tcaagtttta acgaagaaaa acatcattgc agtgaaataa 120
aaaattttta aatttttagaa caaagctaac aaatggctag ttttctatga ttcttcttca 180
aacgctttct ttgaggggga aagagtcaaa caaacaagca gttttacctg aaataaagaa 240
ctagtttttag aggtcagaag aaaggagcaa gttttgcgag aggcacggaa ggagtgtgct 300
ggcagtacaa tgacagtttt cctttccttt gctttcctcg ctgccattct gactcacata 360
gggtgcagca atcagcgccg aagtccagaa aacagtggga gaagatataa ccggattcaa 420
catgggcaat gtgcctacac tttcattctt ccagaacacg atggcaactg tcgtgagagt 480
acgacagacc agtacaacac aaacgctctg cagagagatg ctccacacgt ggaaccggat 540
ttctcttccc agaaacttca acatctggaa catgtgatgg aaaattatac tcagtggctg 600
caaaaaacttg agaattacat tgtggaaaac atgaagtcgg agatggccca gatacagcag 660
aatgcagttc agaaccacac ggctaccatg ctggagatag gaaccagcct cctctctcag 720
actgcagagc agaccagaaa gctgacagat gttgagaccc aggtactaaa tcaaacttct 780
cgacttgaga tacagctgct ggagaattca ttatccacct acaagctaga gaagcaactt 840
cttcaacaga caaatgaaat cttgaagatc catgaaaaaa acagtttatt agaacataaa 900
atcttagaaa tggaaaggaaa acacaaggaa gagttggaca ccttaaagga agagaaagag 960
aaccttcaag gcttggttac tcgtcaaaca tatataatcc aggagctgga aaagcaatta 1020
aacagagcta ccaccaacaa cagtgtcctt cagaagcagc aactggagct gatggacaca 1080
gtccacaacc ttgtcaatct ttgcactaaa gaagtggttt tactaaaggg aggaaaaaga 1140
gaggaagaga aaccatttag agactgtgca gatgtatata aagctggttt taataaaaagt 1200
ggaatctaca ctatttatat taataatatg ccagaaccca aaaagtggtt ttgcaatatg 1260
gatgtcaatg ggggaggttg gactgtaata caacatcgtg aagatggaag tctagatttc 1320
caaagaggct ggaaggaata taaaatgggt tttgaaatc cctccggtga atattggctg 1380
gggaatgagt ttatttttgc cattaccagt cagaggcagt acatgctaag aattgagtta 1440
atggactggg aagggaaccg agcctattca cagtatgaca gattccacat aggaaatgaa 1500
```



|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ile | Gln | Leu | Leu | Glu | Asn | Ser | Leu | Ser | Thr | Tyr | Lys | Leu | Glu | Lys | Gln | 165 | 170 | 175 |     |
| Leu | Leu | Gln | Gln | Thr | Asn | Glu | Ile | Leu | Lys | Ile | His | Glu | Lys | Asn | Ser | 180 | 185 | 190 |     |
| Leu | Leu | Glu | His | Lys | Ile | Leu | Glu | Met | Glu | Gly | Lys | His | Lys | Glu | Glu | 195 | 200 | 205 |     |
| Leu | Asp | Thr | Leu | Lys | Glu | Glu | Lys | Glu | Asn | Leu | Gln | Gly | Leu | Val | Thr | 210 | 215 | 220 |     |
| Arg | Gln | Thr | Tyr | Ile | Ile | Gln | Glu | Leu | Glu | Lys | Gln | Leu | Asn | Arg | Ala | 225 | 230 | 235 | 240 |
| Thr | Thr | Asn | Asn | Ser | Val | Leu | Gln | Lys | Gln | Gln | Leu | Glu | Leu | Met | Asp | 245 | 250 | 255 |     |
| Thr | Val | His | Asn | Leu | Val | Asn | Leu | Cys | Thr | Lys | Glu | Gly | Val | Leu | Leu | 260 | 265 | 270 |     |
| Lys | Gly | Gly | Lys | Arg | Glu | Glu | Glu | Lys | Pro | Phe | Arg | Asp | Cys | Ala | Asp | 275 | 280 | 285 |     |
| Val | Tyr | Gln | Ala | Gly | Phe | Asn | Lys | Ser | Gly | Ile | Tyr | Thr | Ile | Tyr | Ile | 290 | 295 | 300 |     |
| Asn | Asn | Met | Pro | Glu | Pro | Lys | Lys | Val | Phe | Cys | Asn | Met | Asp | Val | Asn | 305 | 310 | 315 | 320 |
| Gly | Gly | Gly | Trp | Thr | Val | Ile | Gln | His | Arg | Glu | Asp | Gly | Ser | Leu | Asp | 325 | 330 | 335 |     |
| Phe | Gln | Arg | Gly | Trp | Lys | Glu | Tyr | Lys | Met | Gly | Phe | Gly | Asn | Pro | Ser | 340 | 345 | 350 |     |
| Gly | Glu | Tyr | Trp | Leu | Gly | Asn | Glu | Phe | Ile | Phe | Ala | Ile | Thr | Ser | Gln | 355 | 360 | 365 |     |
| Arg | Gln | Tyr | Met | Leu | Arg | Ile | Glu | Leu | Met | Asp | Trp | Glu | Gly | Asn | Arg | 370 | 375 | 380 |     |
| Ala | Tyr | Ser | Gln | Tyr | Asp | Arg | Phe | His | Ile | Gly | Asn | Glu | Lys | Gln | Asn | 385 | 390 | 395 | 400 |
| Tyr | Arg | Leu | Tyr | Leu | Lys | Gly | His | Thr | Gly | Thr | Ala | Gly | Lys | Gln | Ser | 405 | 410 | 415 |     |

Ser Leu Ile Leu His Gly Ala Asp Phe Ser Thr Lys Asp Ala Asp Asn  
420 425 430

Asp Asn Cys Met Cys Lys Cys Ala Leu Met Leu Thr Gly Gly Trp Trp  
435 440 445

Phe Asp Ala Cys Gly Pro Ser Asn Leu Asn Gly Met Phe Tyr Thr Ala  
450 455 460

Gly Gln Asn His Gly Lys Leu Asn Gly Ile Lys Trp His Tyr Phe Lys  
465 470 475 480

Gly Pro Ser Tyr Ser Leu Arg Ser Thr Thr Met Met Ile Arg Pro Leu  
485 490 495

Asp Phe

<210> 3  
<211> 2269  
<212> DNA  
<213> Homo sapiens

<400> 3  
tggtgtgtgtg tttatctcct cccagccttg agggagggaa caacactgta ggatctgggg 60  
agagaggaac aaaggaccgt gaaagctgct ctgtaaaagc tgacacagcc ctccaagtg 120  
agcaggactg ttcttccac tgcaatctga cagtttactg catgcctgga gagaacacag 180  
cagtaaaaaac cagggttgct actggaaaaa gaggaagag aagactttca ttgacggacc 240  
cagccatggc agcgtagcag ccctgcgttt cagacggcag cagctcggga ctctggacgt 300  
gtgtttgccc tcaagtttgc taagctgctg gtttattact gaagaaagaa tgtggcagat 360  
tgttttcttt actctgagct gtgatcttgt cttggccgca gcctataaca actttcggaa 420  
gagcatggac agcataggaa agaagcaata tcaggtccag catgggtcct gcagctacac 480  
tttctctctg ccagagatgg acaactgccg ctcttctctc agcccctacg tgtccaatgc 540  
tgtgcagagg gacgcgccgc tcgaatacga tgactcgggtg cagaggctgc aagtgtctgga 600  
gaacatcatg gaaaacaaca ctcaagtggct aatgaagctt gagaattata tccaggacaa 660  
catgaagaaa gaaatggtag agatacagca gaatgcagta cagaaccaga cggctgtgat 720  
gatagaaata gggacaaacc tggtgaacca aacagctgag caaacgcgga agttaactga 780  
tgtggaagcc caagtattaa atcagaccac gagacttgaa cttcagctct tggaaactc 840  
cctctcgaca aacaaattgg aaaaacagat tttggaccag accagtgaat taaacaaatt 900  
gcaagataag aacagtttcc tagaaaagaa ggtgctagct atggaagaca agcacatcat 960  
ccaactacag tcaataaaaag aagagaaaaga tcagctacag gtgttagtat ccaagcaaaa 1020  
ttccatcatt gaagaactag aaaaaaaaaat agtgactgcc acggtgaata attcagttct 1080  
tcaaaagcag caacatgatc tcatggagac agttaataac ttactgacta tgatgtccac 1140  
atcaaactca gctaaggacc ccaactgttg taaagaagaa caaatcagct tcagagactg 1200  
tgctgaagta ttcaaatcag gacacaccac aaatggcatc tacacgttaa cattccctaa 1260  
ttctacagaa gagatcaagg cctactgtga catggaagct ggaggaggcg ggtggacaat 1320  
tattcagcga cgtgaggatg gcagcgttga ttttcagagg acttggaag aatataaagt 1380

```

gggatttggt aacccttcag gagaatattg gctgggaaat gagtttggtt cgcaactgac 1440
taatcagcaa cgctatgtgc ttaaaataca ccttaaagac tgggaaggga atgaggctta 1500
ctcattgtat gaacatttct atctctcaag tgaagaactc aattatagga ttcaccttaa 1560
aggacttaca gggacagccg gcaaaataag cagcatcagc caaccaggaa atgatttttag 1620
cacaaaggat ggagacaacg acaaatgtat ttgcaaagt tcacaaatgc taacaggagg 1680
ctggtggttt gatgcatgtg gtccttccaa cttgaacgga atgtactatc cacagaggca 1740
gaacacaaat aagttcaacg gcattaaatg gtactactgg aaaggctcag gctattcgct 1800
caaggccaca accatgatga tccgaccagc agattttctaa acatcccagt ccacctgagg 1860
aactgtctcg aactattttc aaagacttaa gccagtgca ctgaaagtca cggctgcgca 1920
ctgtgtcctc ttccaccaca gagggcgtgt gtcggtgct gacgggaccc acatgctcca 1980
gattagagcc tgtaaaacttt atcacttaaa cttgcatcac ttaacggacc aaagcaagac 2040
cctaaacatc cataattgtg attagacaga acacctatgc aaagatgaac ccgaggctga 2100
gaatcagact gacagtttac agacgtgct gtcacaacca agaattgtat gtgcaagttt 2160
atcagtaa atactggaaaa cagaacactt atgttatata atacagatca tcttgggaact 2220
gcattcttct gagcactgtt tatacactgt gtaaataccc atatgtcct 2269

```

```

<210> 4
<211> 496
<212> PRT
<213> Homo sapiens

```

```

<400> 4
Met Trp Gln Ile Val Phe Phe Thr Leu Ser Cys Asp Leu Val Leu Ala
  1             5             10             15

Ala Ala Tyr Asn Asn Phe Arg Lys Ser Met Asp Ser Ile Gly Lys Lys
      20             25             30

Gln Tyr Gln Val Gln His Gly Ser Cys Ser Tyr Thr Phe Leu Leu Pro
      35             40             45

Glu Met Asp Asn Cys Arg Ser Ser Ser Ser Pro Tyr Val Ser Asn Ala
      50             55             60

Val Gln Arg Asp Ala Pro Leu Glu Tyr Asp Asp Ser Val Gln Arg Leu
      65             70             75             80

Gln Val Leu Glu Asn Ile Met Glu Asn Asn Thr Gln Trp Leu Met Lys
      85             90             95

Leu Glu Asn Tyr Ile Gln Asp Asn Met Lys Lys Glu Met Val Glu Ile
      100            105            110

Gln Gln Asn Ala Val Gln Asn Gln Thr Ala Val Met Ile Glu Ile Gly
      115            120            125

Thr Asn Leu Leu Asn Gln Thr Ala Glu Gln Thr Arg Lys Leu Thr Asp
      130            135            140

```

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Glu | Ala | Gln | Val | Leu | Asn | Gln | Thr | Thr | Arg | Leu | Glu | Leu | Gln | Leu |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |

Leu Glu His Ser Leu Ser Thr Asn Lys Leu Glu Lys Gln Ile Leu Asp  
165 170 175

Gln Thr Ser Glu Ile Asn Lys Leu Gln Asp Lys Asn Ser Phe Leu Glu  
180 185 190

Lys Lys Val Leu Ala Met Glu Asp Lys His Ile Ile Gln Leu Gln Ser  
195 200 205

Ile Lys Glu Glu Lys Asp Gln Leu Gln Val Leu Val Ser Lys Gln Asn  
210 215 220

Ser Ile Ile Glu Glu Leu Glu Lys Lys Ile Val Thr Ala Thr Val Asn  
225 230 235 240

Asn Ser Val Leu Gln Lys Gln Gln His Asp Leu Met Glu Thr Val Asn  
245 250 255

Asn Leu Leu Thr Met Met Ser Thr Ser Asn Ser Ala Lys Asp Pro Thr  
260 265 270

Val Ala Lys Glu Glu Gln Ile Ser Phe Arg Asp Cys Ala Glu Val Phe  
275 280 285

Lys Ser Gly His Thr Thr Asn Gly Ile Tyr Thr Leu Thr Phe Pro Asn  
290 295 300

Ser Thr Glu Glu Ile Lys Ala Tyr Cys Asp Met Glu Ala Gly Gly Gly  
305 310 315 320

Gly Trp Thr Ile Ile Gln Arg Arg Glu Asp Gly Ser Val Asp Phe Gln  
325 330 335

Arg Thr Trp Lys Glu Tyr Lys Val Gly Phe Gly Asn Pro Ser Gly Glu  
340 345 350

Tyr Trp Leu Gly Asn Glu Phe Val Ser Gln Leu Thr Asn Gln Gln Arg  
355 360 365

Tyr Val Leu Lys Ile His Leu Lys Asp Trp Glu Gly Asn Glu Ala Tyr  
370 375 380

Ser Leu Tyr Glu His Phe Tyr Leu Ser Ser Glu Glu Leu Asn Tyr Arg  
385 390 395 400



|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|     |     |     |     | 100 |     |     |     |     | 105 |     |     |     |     |     |     |     | 110 |
| Gln | Gln | Asn | Ala | Val | Gln | Asn | His | Thr | Ala | Thr | Met | Leu | Glu | Ile | Gly |     |     |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |     |     |
| Thr | Ser | Leu | Leu | Ser | Gln | Thr | Ala | Glu | Gln | Thr | Arg | Lys | Leu | Thr | Asp |     |     |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |     |     |
| Val | Glu | Thr | Gln | Val | Leu | Asn | Gln | Thr | Ser | Arg | Leu | Glu | Ile | Gln | Leu |     |     |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     |     | 160 |     |
| Leu | Glu | Asn | Ser | Leu | Ser | Thr | Tyr | Lys | Leu | Glu | Lys | Gln | Leu | Leu | Gln |     |     |
|     |     |     |     | 165 |     |     |     | 170 |     |     |     |     |     | 175 |     |     |     |
| Gln | Thr | Asn | Glu | Ile | Leu | Lys | Ile | His | Glu | Lys | Asn | Ser | Leu | Leu | Glu |     |     |
|     |     | 180 |     |     |     |     | 185 |     |     |     |     |     | 190 |     |     |     |     |
| His | Lys | Ile | Leu | Glu | Met | Glu | Gly | Lys | His | Lys | Glu | Glu | Leu | Asp | Thr |     |     |
|     | 195 |     |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |     |     |
| Leu | Lys | Glu | Glu | Lys | Glu | Asn | Leu | Gln | Gly | Leu | Val | Thr | Arg | Gln | Thr |     |     |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |     |     |
| Tyr | Ile | Ile | Gln | Glu | Leu | Glu | Lys | Gln | Leu | Asn | Arg | Ala | Thr | Thr | Asn |     |     |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |     |     |
| Asn | Ser | Val | Leu | Gln | Lys | Gln | Gln | Leu | Glu | Leu | Met | Asp | Thr | Val | His |     |     |
|     |     |     | 245 |     |     |     |     |     | 250 |     |     |     |     | 255 |     |     |     |
| Asn | Leu | Val | Asn | Leu | Ser | Thr | Lys | Glu | Gly | Val | Leu | Leu | Lys | Gly | Gly |     |     |
|     |     | 260 |     |     |     |     |     | 265 |     |     |     |     | 270 |     |     |     |     |
| Lys | Arg | Glu | Glu | Glu | Lys | Pro | Phe | Arg | Asp | Cys | Ala | Asp | Val | Tyr | Gln |     |     |
|     | 275 |     |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |     |     |
| Ala | Gly | Phe | Asn | Lys | Ser | Gly | Ile | Tyr | Thr | Ile | Tyr | Ile | Asn | Asn | Met |     |     |
|     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |     |     |
| Pro | Glu | Pro | Lys | Lys | Val | Phe | Cys | Asn | Met | Asp | Val | Asn | Gly | Gly | Gly |     |     |
| 305 |     |     |     | 310 |     |     |     |     |     | 315 |     |     |     |     | 320 |     |     |
| Trp | Thr | Val | Ile | Gln | His | Arg | Glu | Asp | Gly | Ser | Leu | Asp | Phe | Gln | Arg |     |     |
|     |     |     | 325 |     |     |     |     | 330 |     |     |     |     |     | 335 |     |     |     |
| Gly | Trp | Lys | Glu | Tyr | Lys | Met | Gly | Phe | Gly | Asn | Pro | Ser | Gly | Glu | Tyr |     |     |
|     |     | 340 |     |     |     |     | 345 |     |     |     |     |     | 350 |     |     |     |     |
| Trp | Leu | Gly | Asn | Glu | Phe | Ile | Phe | Ala | Ile | Thr | Ser | Gln | Arg | Gln | Tyr |     |     |



|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |  |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|
| 355 |     |     |     |     |     | 360 |     |     |     |     |     | 365 |     |     |     |  |  |
| Met | Leu | Arg | Ile | Glu | Leu | Met | Asp | Trp | Glu | Gly | Asn | Arg | Ala | Tyr | Ser |  |  |
| 370 |     |     |     |     |     | 375 |     |     |     |     |     | 380 |     |     |     |  |  |
| Gln | Tyr | Asp | Arg | Phe | His | Ile | Gly | Asn | Glu | Lys | Gln | Asn | Tyr | Arg | Leu |  |  |
| 385 |     |     |     | 390 |     |     |     |     |     | 395 |     |     |     | 400 |     |  |  |
| Tyr | Leu | Lys | Gly | His | Thr | Gly | Thr | Ala | Gly | Lys | Gln | Ser | Ser | Leu | Ile |  |  |
|     |     |     | 405 |     |     |     |     |     | 410 |     |     |     |     |     | 415 |  |  |
| Leu | His | Gly | Ala | Asp | Phe | Ser | Thr | Lys | Asp | Ala | Asp | Asn | Asp | Asn | Cys |  |  |
|     |     |     | 420 |     |     |     |     |     | 425 |     |     |     |     |     | 430 |  |  |
| Met | Cys | Lys | Cys | Ala | Leu | Met | Leu | Thr | Gly | Gly | Trp | Trp | Phe | Asp | Ala |  |  |
| 435 |     |     |     |     |     | 440 |     |     |     |     |     | 445 |     |     |     |  |  |
| Cys | Gly | Pro | Ser | Asn | Leu | Asn | Gly | Met | Phe | Tyr | Thr | Ala | Gly | Gln | Asn |  |  |
| 450 |     |     |     |     |     | 455 |     |     |     |     |     | 460 |     |     |     |  |  |
| His | Gly | Lys | Leu | Asn | Gly | Ile | Lys | Trp | His | Tyr | Phe | Lys | Gly | Pro | Ser |  |  |
| 465 |     |     | 470 |     |     |     |     |     | 475 |     |     |     |     |     | 480 |  |  |
| Tyr | Ser | Leu | Arg | Ser | Thr | Thr | Met | Met | Ile | Arg | Pro | Leu | Asp | Phe |     |  |  |
|     |     |     | 485 |     |     |     |     |     | 490 |     |     |     |     |     | 495 |  |  |